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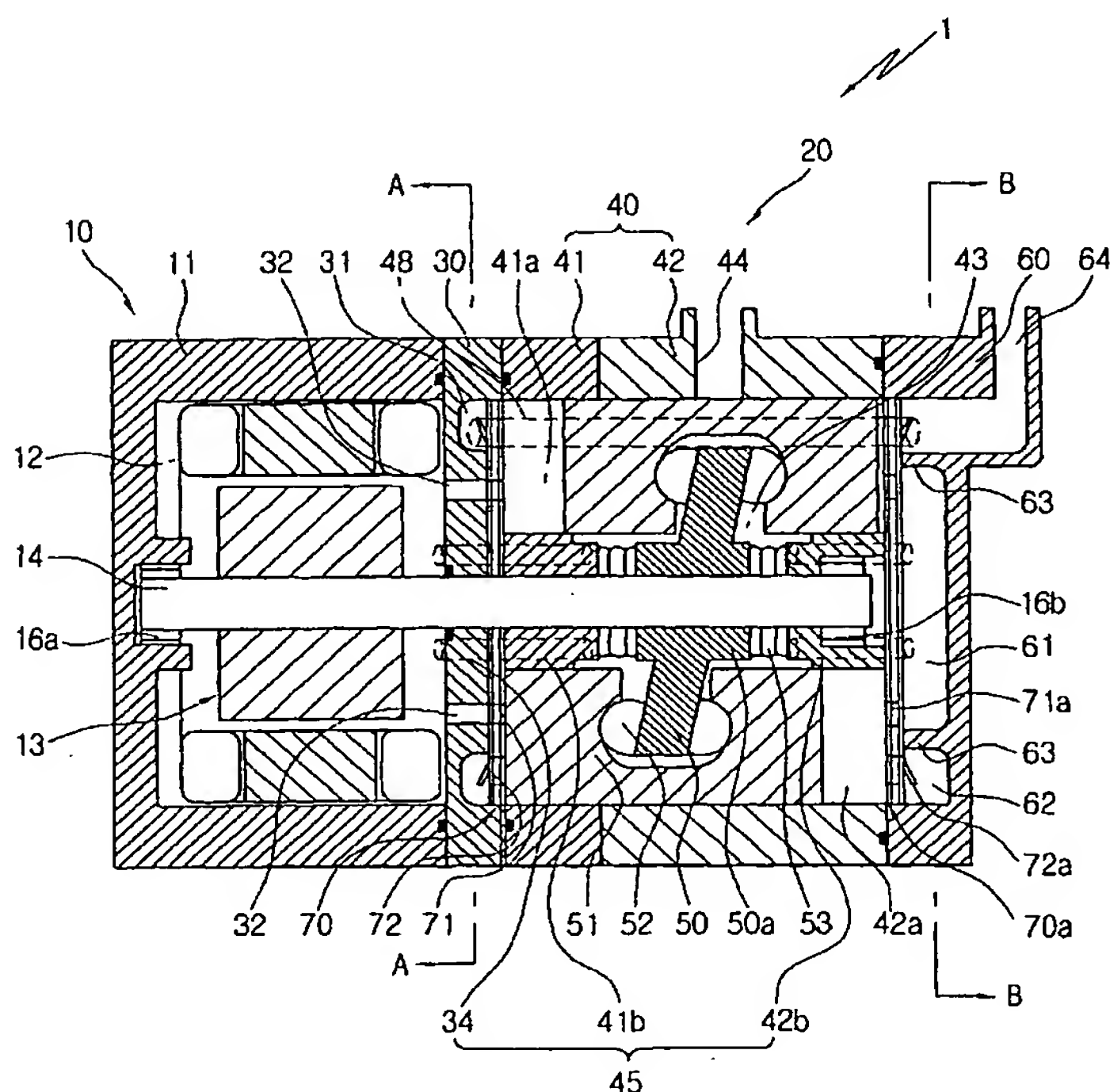
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(54) Title: MOTOR DRIVEN COMPRESSOR



(57) Abstract: A motor driven compressor which can use refrigerant sucked into a swash plate chamber of the compressor to efficiently cool an electric motor, in which a motor unit (10) has an electric motor (13) installed in an inside motor room (12) for rotating a drive shaft (14) and a compressor unit (20, 120) is installed at one side of the motor unit (10). The compressor unit (20, 120) comprises: a front housing (30, 130) having at least a discharge chamber (31, 131) therein; a rear housing (60, 160) having a suction chamber (61, 161) and a discharge chamber (62, 162) formed therein, the suction chamber (61, 161) being partitioned from the discharge chamber (62, 162), and a refrigerant discharge port (64, 164) formed at one side communicating with the discharge chamber (62, 162); a cylinder block coupled between the front housing (30, 130) and the rear housing (60, 160) and having a plurality bores (41a and 42, 141a and 142a) formed at both sides of the swash plate chamber (43, 143) and a refrigerant suction port (44, 144) formed at one side thereof; a swash plate (50, 150) placed in the swash plate chamber (43, 143) and coupled with the drive shaft (14) and a plurality of double head pistons (51, 151) for reciprocating within the bores (41a and 42, 141a and 142a) in

cooperation with the rotation of the swash plate (50, 150); and feeding means (17, 45, 145) for feeding refrigerant from the swash plate chamber (43, 143) partially into the motor room (12) and partially into the suction chamber (61, 161) of the rear housing (60, 160).

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AMENDED CLAIMS

[received by the International Bureau on 21 September 2004 (21.09.2004);
original claim 1 amended; original claim 7 cancelled;
remaining claims unchanged (3 pages)]

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What Is Claimed Is:

1. (amended) A motor driven compressor comprising:
 - a motor unit 10 having an electric motor 13 installed in an inside motor
 - 5 room 12 for rotating a drive shaft 14; and
 - a compressor unit 20, 120 installed at one side of the motor unit 10, wherein the compressor unit 20, 120 comprises:
 - a front housing 30, 130 having at least a discharge chamber 31, 131 therein;
 - 10 a rear housing 60, 160 having a suction chamber 61, 161 and a discharge chamber 62, 162 formed therein, the suction chamber 61, 161 being partitioned from the discharge chamber 62, 162, and a refrigerant discharge port 64, 164 formed at one side communicating with the discharge chamber 62, 162;
 - a cylinder block coupled between the front housing 30, 130 and the rear
 - 15 housing 60, 160 and having a plurality bores 41a and 42, 141a and 142a formed at both sides of the swash plate chamber 43, 143 and a refrigerant suction port 44, 144 formed at one side thereof;
 - a swash plate 50, 150 placed in the swash plate chamber 43, 143 and coupled with the drive shaft 14 and a plurality of double head pistons 51, 151 for
 - 20 reciprocating within the bores 41a and 42, 141a and 142a in cooperation with the rotation of the swash plate 50, 150;
 - feeding means 17, 45, 145 for feeding refrigerant from the swash plate chamber 43, 143 partially into the motor room 12 and partially into the suction chamber 61, 161 of the rear housing 60, 160; and
 - 25 the front housing 30, 130 further has suction passages 32, 132 for communicating the motor room 12 to the bores 41a, 141a to allow the suction of refrigerant supplied to the motor room 12 into the bores 41a, 141a of the cylinder block 40, 140

2. The motor driven compressor according to claim 1, wherein the feeding means 45, 145 include first low pressure passages 34 and 41b, 134 and 141b communicating the swash plate chamber 43, 143 to the motor room 12 and a second low pressure passage 42b, 142b for communicating the swash plate chamber 43, 143 to the suction chamber 61, 161 of the rear housing 60, 160.

3. The motor driven compressor according to claim 2, wherein the first low pressure passages 34 and 41b, 134 and 141b are formed through the front cylinder block 41, 141 and the front housing 30, 130, and the second low pressure passage 42b, 142b is formed through the rear cylinder block 42, 142.

4. The motor driven compressor according to claim 1, wherein the feeding means include a passage 14a formed in the drive shaft 14 for communicating the motor room 12 to the suction chamber 61 of the rear housing 60 and inlet passages 15 and 15a for communicating the swash plate chamber 43 to the passage 14a to allow the flow of refrigerant from the swash plate chamber 43 toward the passage 14a.

5. The motor driven compressor according to claim 4, wherein the inlet passages 15 and 15a are formed through the drive shaft 14 and a hub 50a of the swash plate 50.

6. The motor driven compressor according to claim 4, wherein the inlet passages 15 and 15a are formed in the drive shaft 14 beyond a surface of the drive shaft 14 coupling with the swash plate 50.

7. (Cancelled)

8. The motor driven compressor according to claim 1, wherein the discharge chamber 31, 131 of the front housing 30, 130 is communicated with the discharge chamber 62, 162 of the rear housing 60, 160 via a communication passageway 48, 148 formed through the cylinder block 40, 140.

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9. The motor driven compressor according to claim 1, wherein the front housing 130 further has a suction chamber 135 partitioned from the discharge chamber 131.

10 10. The motor driven compressor according to claim 1, further comprising a suction muffler chamber 180 formed at one side of the cylinder block 140, the suction muffler chamber 180 is mounted with motor-controlling means 181 on an upstream section where refrigerant is introduced into the swash plate chamber 143.

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11. The motor driven compressor according to claim 10, wherein the motor-controlling means 181 comprises an inverter 182.

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ARTICLE 19 AMENDMENTS

What Is Claimed Is:

1. (amended) A motor driven compressor comprising:

5 a motor unit 10 having an electric motor 13 installed in an inside motor room 12 for rotating a drive shaft 14; and

a compressor unit 20, 120 installed at one side of the motor unit 10, wherein the compressor unit 20, 120 comprises:

a front housing 30, 130 having at least a discharge chamber 31, 131 therein;

10 a rear housing 60, 160 having a suction chamber 61, 161 and a discharge chamber 62, 162 formed therein, the suction chamber 61, 161 being partitioned from the discharge chamber 62, 162, and a refrigerant discharge port 64, 164 formed at one side communicating with the discharge chamber 62, 162;

15 a cylinder block coupled between the front housing 30, 130 and the rear housing 60, 160 and having a plurality bores 41a and 42, 141a and 142a formed at both sides of the swash plate chamber 43, 143 and a refrigerant suction port 44, 144 formed at one side thereof;

20 a swash plate 50, 150 placed in the swash plate chamber 43, 143 and coupled with the drive shaft 14 and a plurality of double head pistons 51, 151 for reciprocating within the bores 41a and 42, 141a and 142a in cooperation with the rotation of the swash plate 50, 150;

feeding means 17, 45, 145 for feeding refrigerant from the swash plate chamber 43, 143 partially into the motor room 12 and partially into the suction chamber 61, 161 of the rear housing 60, 160; and

25 the front housing 30, 130 further has suction passages 32, 132 for communicating the motor room 12 to the bores 41a, 141a to allow the suction of refrigerant supplied to the motor room 12 into the bores 41a, 141a of the cylinder block 40, 140

2. The motor driven compressor according to claim 1, wherein the feeding means 45, 145 include first low pressure passages 34 and 41b, 134 and 141b communicating the swash plate chamber 43, 143 to the motor room 12 and a second low pressure passage 42b, 142b for communicating the swash plate chamber 43, 143 to the suction chamber 61, 161 of the rear housing 60, 160.

3. The motor driven compressor according to claim 2, wherein the first low pressure passages 34 and 41b, 134 and 141b are formed through the front cylinder block 41, 141 and the front housing 30, 130, and the second low pressure passage 42b, 142b is formed through the rear cylinder block 42, 142.

4. The motor driven compressor according to claim 1, wherein the feeding means include a passage 14a formed in the drive shaft 14 for communicating the motor room 12 to the suction chamber 61 of the rear housing 60 and inlet passages 15 and 15a for communicating the swash plate chamber 43 to the passage 14a to allow the flow of refrigerant from the swash plate chamber 43 toward the passage 14a.

5. The motor driven compressor according to claim 4, wherein the inlet passages 15 and 15a are formed through the drive shaft 14 and a hub 50a of the swash plate 50.

6. The motor driven compressor according to claim 4, wherein the inlet passages 15 and 15a are formed in the drive shaft 14 beyond a surface of the drive shaft 14 coupling with the swash plate 50.

7. (Cancelled)

8. The motor driven compressor according to claim 1, wherein the discharge chamber 31, 131 of the front housing 30, 130 is communicated with the discharge chamber 62, 162 of the rear housing 60, 160 via a communication passageway 48, 148 formed through the cylinder block 40, 140.

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9. The motor driven compressor according to claim 1, wherein the front housing 130 further has a suction chamber 135 partitioned from the discharge chamber 131.

10 10. The motor driven compressor according to claim 1, further comprising a suction muffler chamber 180 formed at one side of the cylinder block 140, the suction muffler chamber 180 is mounted with motor-controlling means 181 on an upstream section where refrigerant is introduced into the swash plate chamber 143.

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11. The motor driven compressor according to claim 10, wherein the motor-controlling means 181 comprises an inverter 182.